REMARKS

Upon entry of the present amendment, claims 1-8 will remain pending in the above-identified application and stand ready for further action on the merits.

The amendments made herein to the specification and claims do not incorporate new matter into the application as originally filed. For example, the following is particularly noted.

With regard to Table 3, at page 23, it is noted that the changes being made simply correct typographical errors that occurred during translation of the Japanese language PCT Application into the English language. In support of this contention, attached to the present amendment is a copy of the original Japanese text for the page containing Table 3. Upon review of the data in the Japanese text for Table 3, it can be seen that the present amendments do not incorporate new matter into the application.

Concerning the amendments made to claims 1 and 2, these also find support in the original filed application. For example, the lower limit of "45 wt.%" on styrene occurs at page 8, line 21, while the upper limit "70 wt.%" of the styrene occurs in Table 1 (page 21) for the copolymer II. Similarly, the upper limit of the 1,2-bond content of the polybutadiene block Y of "65 wt.%" occurs in Table 1, at page 21, of the specification (see copolymer II).

Concerning the language "weight average molecular weight" utilized in claim 2, it is noted that this language finds support at page 10 of the specification, lines 7-11.

Based upon the above considerations, entry of the present amendments is respectfully requested.

Claim Rejections Under 35 USC § 112

Claims 2 and 4 have been rejected under 35 USC § 112, second paragraph. Reconsideration and withdrawal of this rejection is requested based upon the use of the term "weight average molecular weight" in claim 2.

Claim Rejections Under 35 USC § 102/103

Claims 1-6 and 8 have been rejected under 35 USC § 102(b) as anticipated by or, in the alternative, under 35 USC § 103(a) over Junji et al. (JP 06-271717). Further, claims 1-6 and 8 have been rejected under 35 USC § 102(b) as anticipated by or, in the alternative, under 35 USC § 103(a) as obvious over Shinetsuro et al. (JP 06-192502). Still further, claims 1-8 have been rejected under 35 USC § 102(b) as anticipated by or, in the alternative, under 35 USC § 103(a) as being obvious over Kawamura et al. (JP 4-45140). Reconsideration and withdrawal of each of these alternative § 102/103 rejections are respectfully requested based upon the following considerations.

The Present Invention and Its Advantages

An important feature of the present invention resides in the finding that in the composition of components (A), (B) and (C) as claimed, at least 50% of the component (C) can be made to exist at the interface between the phase of component (A) and the phase of component (B) by regulating the styrene content of the hydrogenated block copolymer (C) and the 1,2-bond content of the polybutadiene block Y constituting the hydrogenated block copolymer (C), each within a specific range.

By making the hydrogenated block copolymer (hereinafter referred to as "SEBS") exist at the interface between the polystyrene (hereinafter referred to as "PS") phase and the propylene (hereinafter referred to as "PP") phase of the PS/PP alloy as much as possible, the interface can be reinforced to thereby enhance the physical properties of the alloy. As the result, a thermoplastic resin composition having excellent tensile elongation properties and oil resistance can be obtained.

As described in the paragraph bridging pages 8 and 9 of the specification, with smaller styrene content, the hydrogenated block copolymer (C) and the styrene resin lack affinity therebetween, whereas with larger styrene content, the affinity to the styrene resin phase becomes excessive to result in insufficient compatibilizing effects.

Similarly, as described in the first full paragraph on page 9, smaller 1,2-bond content results in lack of affinity to propylene resin, whereas larger 1,2-bond content makes the affinity to propylene resin excessive to result in insufficient compatibilizing effects.

Comparative Example 2 is an example employing hydrogenated copolymer V having a styrene content smaller than the claimed range. Comparative Example 3 is an example employing hydrogenated copolymer VI having a 1,2-bond content smaller than the claimed range. See Tables 1 and 3. As can be seen from Table 2 and the corrected Table 3, the compositions of Comparative Examples 2 and 3 showed inferior tensile elongation and oil resistance as compared to compositions of the working Examples.

Thus, a composition having excellent physical properties can be obtained by employing SEBS having specific styrene content and 1,2-bond content to make at least 50% thereof exist in the interface between the PS phase and the PP phase.

Distinctions over the Cited Art

None of the cited references teaches nor suggests the technical concept of the invention as described above.

Referring to Junji et al., the hydrogenated block copolymers used in Examples 1 to 8 all have a high 1,2-bond content (i.e., vinyl content) ranging from 76 to 78% (see Table 1, 6th column from

the left), which excessively enhances the affinity to the PP phase and does not allow at least 50% of SEBS to exist in the PS/PP interface. Furthermore, the hydrogenated block copolymers used in Comparative Examples 1-7 and 10-11 do not meet the presently claimed requirements of 1,2-bond content (i.e., vinyl content: see Table 2, 6th column from the left) or of styrene content (see Table 2, 5th column from the left). Therefore, the hydrogenated block copolymers disclosed in Juni et al. do not fall within the claimed range and hence do not give the effects of the present invention.

Regarding Sinetsuro et al., the hydrogenated copolymer disclosed in Reference Example 1 has a styrene content of 41% and 1,2-bond content of 86%, and Tuftec H1041 has a styrene content of 30% (see the attached product information sheet enclosed herewith), thus neither failing within the claimed scope. Therefore, the hydrogenated copolymers disclosed in Shinetsuro et al. do not exhibit good affinity to PP/PS.

Regarding Kawamura et al., SEBS 1-4 disclosed in the Examples thereof have styrene content contents ranging from 31 to 34%. Therefore, these SEBS have insufficient affinity to the PS phase and cannot give the effects of the present invention.

As argued above, none of the cited references discloses a hydrogenated block copolymer satisfying the presently claimed requirements, nor suggests the technical concept and the effects of the present invention.

CONCLUSION

Based upon the amendments and remarks presented herein, the Examiner is respectfully requested to allow claims 1-8 of the present application, since these claims are neither anticipated nor rendered obvious by any of the cited art, and at the same time particularly and distinctly set forth what Applicants' regard as their inventive discovery.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John W. Bailey (Reg. No. 32,881) at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By _____
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Falls Church, VA 22040-0747
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JWB/end
0649-0800P

Attachment: Version with Markings to Show Changes Made
Rewritten Table 3
Japanese Priority Document (Page 12)
Product Information on Tuftec™

(Rev. 02/20/02)

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Table 3 on page 23 has been amended as follows:

	Comp. Ex. 1	Comp. Ex. 2	Comp. Ex. 3	Comp. Ex. 4
Structure of hydrogenated block copolymer	-	V	VI	VII
Hydrogenated block copolymer (parts)	0	6	6	6
HIPS (wt.%)	70	70	70	70
[GPPS (wt.%)]	[30]	[30]	[30]	[30]
[ABS (wt.%)]	[3]	[15]	[30]	[21]
b-PP (wt.%)	30	30	[50] 30	30
Elongation at break (%)	[106] 3	[106] 15	[107] 30	[108] 21
Heat deformation temperature (°C)	[107] 106	[107] 106	[112] 107	[107] 108
Flexural modulus (kgf/cm^2)	19000	15800	16500	14000
Oil resistance (°C)	70	81	86	83
Phase separation structure	sea-island	Mutual impregnation	Mutual impregnation	Mutual impregnation
Existing ratio (%) of block copolymer on interface	-	30	45	40

IN THE CLAIMS:

The claims have been amended as follows:

1. (Amended) A thermoplastic resin composition comprising:

(A) a styrene resin;

(B) a propylene resin; and

(C) a hydrogenated block copolymer comprising at least two polystyrene blocks X and at least one polybutadiene block Y, with at least 70 % of the double bonds of the polybutadiene of the polybutadiene block Y having been hydrogenated,

wherein the hydrogenated block copolymer (C) has a styrene content of [40] 45 to [80] 70 wt.%, a 1,2-bound content of the polybutadiene block Y is 30 to [80] 65 wt.%, a weight ratio of the component (A) to the component (B) is 95:5 to 5:95, a content of the component (C) is 2 to 30 parts by weight based on 100 parts by weight of the components (A) and (B), and at least 50% of the component (C) exists at the interference between a phase of the component (A) and a phase of the component (B).

2. (Amended) The thermoplastic resin composition according to claim 1, wherein in the component (C), the polystyrene block X has a weight average molecular weight of 5000 to 50000, and the polybutadiene block Y has a weight average molecular weight of 5000 to 70000.

Table 3

	Comp. Ex. 1	Comp. Ex. 2	Comp. Ex. 3	Comp. Ex. 4
Structure of hydrogenated block copolymer	-	V	VI	VII
Hydrogenated block copolymer (parts)	0	6	6	6
HIPS (wt.%)	70	70	70	70
b-PP (wt.%)	30	30	30	30
Elongation at break (%)	3	15	30	21
Heat deformation temperature (°C)	106	106	107	108
Flexural modulus (kgf/cm^2)	19000	15800	16500	14000
Oil resistance (°C)	70	81	86	83
Phase separation structure	sea-island	Mutual impregnation	Mutual impregnation	Mutual impregnation
Existing ratio (%) of block copolymer on interface	-	30	45	40

３０ｍｍ径２軸スクリュー押出機を用いて２１０～２３０℃で溶融混練し、ペレット状の組成物を得た。このペレット状組成物について各種測定を行った。組成比率および測定結果を表２、表３に示す。

表２

	実施例1	実施例2	実施例3	実施例4	実施例5	実施例6	実施例7	実施例8
水素添加ブロック共重合体の構造	I	I	I	I	II	III	IV	I
水素添加ブロック共重合体(部数)	6	15	6	10	6	6	6	15
HIPS(重量%)	70	70	50		70	70	70	
GPPS(重量%)				70				
ABS(重量%)								70
b－PP(重量%)	30	30	50	30	30	30	30	30
破断伸び(%)	120	180	300	100	240	100	130	100
熱変形温度(℃)	107	107	112	107	109	106	107	105
曲げ弾性率(kgf／cm2)	17800	16400	15600	22000	17200	16600	17300	15400
耐油性(℃)	105	103	115	105	109	102	108	110
相分離構造	相互侵入	相互侵入	相互侵入	相互侵入	相互侵入	相互侵入	相互侵入	相互侵入
ブロック共重合体境界面存在率(%)	85	70	95	83	90	70	87	67

表３

	比較例1	比較例2	比較例3	比較例4
水素添加ブロック共重合体の構造	—	V	VI	VII
水素添加ブロック共重合体(部数)	0	6	6	6
HIPS(重量%)	70	70	70	70
b－PP(重量%)	30	30	30	30
破断伸び(%)	3	15	30	21
熱変形温度(℃)	106	106	107	108
曲げ弾性率(kgf／cm2)	19000	15800	16500	14000
耐油性(℃)	70	81	86	83
相分離構造	海島	相互侵入	相互侵入	相互侵入
ブロック共重合体境界面存在率(%)	—	30	45	40

また、実施例１及び比較例２の熱可塑性樹脂組成物を透過型電子顕微鏡で観察した相分離構造をそれぞれ図１及び図２に示す。図２では、プロピレン樹脂相(染

Product Information Tuftec™

Tuftec™ H1041

SEBS: Hydrogenated styrenic thermoplastic elastomer

Essentials

Relatively low molecular weight and thus high processability and flowability, along with superior balance of mechanical stren elastomer and elongation. It is supplied in pellet form.

Contact us for information on handling a

Applications

Olefinic and styrenic resins modifier, for high impact strength. Compatibilizer. Adhesives and sealants component. Base polyn SEBS molding compounds.
IC trays

Basic characteristics of Tuftec™ H1041

Property	Test method	Value
Specific gravity	ASTM D 297	0.91
MFR (g/10 min) 190°C, 2.16 kg load	ASTM D 1238	5
Hardness Type A	JIS K 6253	84
Tensile strength (MPa) #3 dumbbell, 500 mm/min	JIS K 6251	21.6
Elongation (%) #3 dumbbell, 500 mm/min		650
300% tensile stress (MPa)		3.4
Styrene/(ethylene/butylene) (wt%)	Asahi Kasei method	30/70
Product form	–	Pellet

Please note that all data and values are given as typical results obtained with the indicated test methods for purposes of basic reference in grade selection only, and not as any product specification or warranty of any nature, and are subject to change wi notice.

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